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Form INV-2 EMISSION POINT DESCRIPTION

1) Company/Facility Name	ACME CORPORATION	1a) Form INV-2 Page	3	of	3
2) Emission Point Number	EP3				
3) Emission Point Description	BOILER STACK				

4) Is this stack/vent used as an Emergency Bypass Stack?	No ☒	Yes ☐
If YES, for which stack(s)? List Emission Point Nos.:		

EMISSION POINT INFORMATION

5) Emission Point Type

Stack/Vent	☒	
Fugitive (specify)	☐	
Other (specify)	☐	

6) Stack Shape and Dimensions: (interior dimensions at exit point)

Circular Diameter:	☒	24	inches		
Rectangular Dimensions:	☐		inches	X	inches
Other Dimensions	☐		inches		

7) Stack Height Above Ground	35	feet

8) Does the Emission Point have a rain cap (or anything else) which obstructs the flow of gases leaving the Emission Point, or a horizontal discharge?

No ☐	YES (specify): ☒	RAIN CAP

9) COMPOSTION OF EXHAUST STREAM

Exhaust Stream Characteristics	Emission Point Composition of Exhaust Stream	Units of Measure
a) Flow Rate	6,100	☒ ACFM ☐ SCFM
b) Temperature	350	Degree Fahrenheit

10) BYPASS STACKS

Bypass Stack – Emission Point No.		Bypass Stack Description	
Bypass Stack – Emission Point No.		Bypass Stack Description	

11) LIST OF EMISSION UNITS VENTING THROUGH THIS EMISSION POINT

Emission Unit No.	Emission Unit No	Emission Unit No.	Emission Unit No.
EU3			

Duplicate this form as needed   TYPE ALL INFORMATION   (DNR Form 542-4004. December 24, 2007)

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Form INV-2

Form INV-5 CALCULATIONS

1) Company/Facility Name	**ACME CORPORATION**		1a) Form INV-5 Page	**5** of	**5**

2) Emission Point No.	**EP3**	3) Emission Unit No.	**EU3**	

4) Calculations are provided in support of information reported on Form INV - **3** ☒ **4** ☒ for the Emission Point and Emission Unit listed above.

5) Emissions Calculations

Process: Industrial Boiler SCC No. 10200502

Fuel: No. 2 Fuel Oil: 140,000 Btu per gallon, Percent sulfur content = 0.4
Maximum rate: 15 Million Btu/hr, 107 gallons per hour = 0.107 1,000 gallons per hour
Actual Year Throughput - Yearly Total: 5,000 gallons

Pollutant	Emission Factors from FIRE 6.25 (SCC No. 10200502)	
$PM_{2.5}$	1.55 lb per 1,000 gallons burned	
PM_{10}	2.3 lb per 1,000 gallons burned	
SO_2	142 (S) lb per 1,000 gallons burned	S = percent sulfur in fuel
NOx	20.0 lb per 1,000 gallons burned	
VOC	0.2 lb per 1,000 gallons burned	
CO	5.00 lb per 1,000 gallons burned	
Ammonia	0.8 lb per 1,000 gallons burned	

Calculations

POTENTIAL EMISSIONS:
In order for the calculation to work, the design capacity units of measure have to cancel with the emission factor units of measure to obtain a pound per hour value. Since the emission factor units of measure are in pounds per 1,000 gallons, the maximum design rate must be in 1,000 gallons per hour.

Potential $PM_{2.5}$ tons/yr
(0.107 1,000 gal/hr) x (1.55 lb/1,000 gal) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.73

Potential SO_2 tons/yr
(0.107 1,000 gal/hr) x [142 (0.4 % sulfur) lb/1,000 gal] x (8,760 hr/yr) x (1 ton/2,000 lb) = 26.62

Potential PM_{10} tons/yr = 1.08
Potential NOx tons/yr = 9.37
Potential VOC tons/yr = 0.09
Potential CO tons/yr = 2.34
Potential Ammonia tons/yr = 0.37

ACTUAL ANNUAL EMISSIONS:
Actual $PM_{2.5}$ tons
(5 1,000 gal) x (1.55 lb/1,000 gal) x (1 ton/2,000 lb) = 0.00

Actual SO_2 tons
(5 1,000 gal) x [142 (0.4 % sulfur) lb/1,000 gal] x (1 ton/2,000 lb) = 0.14

Actual PM_{10} tons = 0.01
Actual NOx tons = 0.05
Actual VOC tons = 0.00
Actual CO tons = 0.01
Actual Ammonia tons = 0.00

Form INV-3 EMISSION UNIT DESCRIPTION – POTENTIAL EMISSIONS   **Duplicate this form for EACH Emission UNIT**

1) Company/Facility Name	ACME CORPORATION		1a) Form INV-3 Page	3	of	3

2) Emission Point Number	EP3

EMISSION UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

3) Emission Unit Number	EU3
4) SCC Number	10200502
5) Description of Process	NO. 2 FUEL OIL COMBUSTION

6) Date of Construction	10/30/1985	7) Date of Installation	10/30/1985	8) Date of Modification	

9) Raw Material – OR Fuels Used List worst case for EACH pollutant	NO. 2 FUEL OIL
10) Federally Enforceable Limit	
11) Permit or Rule Establishing Limit	

12) Maximum Hourly Design Rate	0.107	1,000 GALLONS	Per Hour

13)   AIR POLLUTION CONTROL EQUIPMENT (CE)

Control Equipment Number	
Control Equipment Description	
Control Equipment Number	
Control Equipment Description	

POTENTIAL EMISSIONS

14 Air Pollutant	15 Emission Factor	16 Emission Factor Units	17 Source of Emission Factor	18 Ash or Sulfur %	19 Potential Hourly Uncontrolled Emissions (Lbs/Hr)	20 Combined Control Efficiency	21 Transfer Efficiency	22 Potential Hourly Controlled Emissions (Lbs/Hr)	23 Potential Annual Emissions (Tons/Yr)
PM-2.5	1.55	LB/1,000 GAL	WEBFIRE		0.17				0.73
PM-10	2.3	LB/1,000 GAL	WEBFIRE		0.25				1.08
SO₂	142	LB/1,000 GAL	WEBFIRE	0.4	6.08				26.62
NOx	20.0	LB/1,000 GAL	WEBFIRE		2.14				9.37
VOC	0.2	LB/1,000 GAL	WEBFIRE		0.02				0.09
CO	5.0	LB/1,000 GAL	WEBFIRE		0.54				2.34
Lead									
Ammonia	0.80	LB/1000 GAL	WEBFIRE		0.09				0.37

POTENTIAL EMISSIONS – Individual HAPs and additional regulated air pollutants – list each individual pollutant name in Column 14

*Sources of Emission Factors: CEM .. Stack Test .. Mass Balance .. AP-42 .. WebFIRE.. TANKS.. EPA-L&E .. Worksheet .. Other – Specify

Duplicate this form as needed   TYPE ALL INFORMATION   (DNR Form 542-4001. December 24, 2007)

Form INV-3

Form INV-4 EMISSION UNIT DESCRIPTION – ACTUAL EMISSIONS

1) Company/Facility Name	ACME CORPORATION		1a) Form INV-4 Page	3	of	3

2) Emission Year	2008	3) Emission Point Number	EP3

EMISSION UNIT – ACTUAL OPERATIONS AND EMISSIONS

4) Emission Unit Number	EU3	5) SCC Number	10200502

6) Description of Process	NO. 2 FUEL OIL COMBUSTION

ACTUAL THROUGHPUT

7) Raw Material	NO. 2 FUEL OIL

8) Actual Throughput – Yearly Total	5	9) Units Raw Material	1,000 GALLONS

Actual Operating Rate/Schedule

	10) Percent of Total Operating Time	11) Hours/Day	12) Days/Week	13) Weeks/Quarter
JAN – MAR	35	24	7	13
APR – JUN	15	24	7	6
JUL – SEP	15	24	7	6
OCT - DEC	35	24	7	13

14) AIR POLLUTION CONTROL EQUIPMENT (CE)

Control Equipment Number	
Control Equipment Description	
Control Equipment Number	
Control Equipment Description	

ACTUAL EMISSIONS

15 Air Pollutant	16 Emission Factor	17 Emission Factor Units	18 Source of Emission Factor	19 Ash or Sulfur %	20 Combined Control Efficiency	21 Transfer Efficiency	22 Actual Emissions (Tons/Yr)
PM-2.5	1.55	LB/1,000 GAL	WEBFIRE				0.00
PM-10	2.3	LB/1,000 GAL	WEBFIRE				0.01
SO$_2$	142	LB/1,000 GAL	WEBFIRE	0.4			0.14
NOX	20.0	LB/1,000 GAL	WEBFIRE				0.05
VOC	0.2	LB/1,000 GAL	WEBFIRE				0.00
CO	5.0	LB/1,000 GAL	WEBFIRE				0.01
Lead							
Ammonia	0.80	LB/1,000 GAL	WEBFIRE				0.00

ACTUAL EMISSIONS – Individual HAPs and additional regulated air pollutants – list each individual pollutant name in Column 15

*Sources of Emission Factors: CEM .. Stack Test .. Mass Balance .. AP-42 .. WebFIRE.. TANKS.. EPA-L&E .. Worksheet .. Other – Specify

Duplicate this form as needed   TYPE ALL INFORMATION   (DNR Form 542-4002 December 24, 2007)

Form INV-4